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May 13, 2002

Regional Water Quality Control Board
San Francisco Region
1515 Clay Street, Suite 1400
Oakland, CA 94612-1404

Attention: Loretta Barsamian
Executive Officer

Subject: Sanitary District No. 5 of Marin County Infeasibility Study

Dear Ms. Barsamian,

The enclosed feasibility analyses and resulting requests for compliance schedule and interim limits are submitted to the Regional Water Quality Control Board (RWQCB) by Sanitary District No. 5 of Marin County to demonstrate the District's inability to comply with the proposed water-quality based effluent limit for mercury.

Background

The Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays and Estuaries of California (known as the State Implementation Policy (SIP), March, 2000) establishes statewide policy for NPDES permitting. The SIP provides for the situation where an existing NPDES discharger cannot immediately comply with an effluent limitation derived from a California Toxics Rule (CTR) criterion. The SIP allows for the adoption of interim effluent limits and a schedule to come into compliance with the final limit in such cases. To qualify for interim limits and a compliance schedule, the SIP requires that an existing discharger demonstrate that it is infeasible to achieve immediate compliance with the CTR-based limit.

The term "infeasible" is defined in the SIP as "not capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social and technological factors."

The SIP requires that the following information be submitted to the Regional Board to support a finding of infeasibility:

(a) documentation that diligent efforts have been made to quantify pollutant levels in the discharge and sources of the pollutant in the waste stream, including the results of those efforts;
(b) documentation of source control and/or pollution minimization efforts currently under way or completed;

(c) a proposed schedule for additional or future source control measures, pollutant minimization or waste treatment; and
(d) a demonstration that the proposed schedule is as short as practicable.

The SIP requires that interim numeric effluent limits be based on (a) current treatment facility performance or (b) limits in the existing permit, which ever is more stringent.

The SIP also requires that compliance schedules be limited to specific time periods, depending on whether the pollutant is on the 303(d) list. For pollutants not on the 303(d) list, the maximum length of the compliance schedule is 5 years from the date of permit issuance. For pollutants on the 303(d) list (where a TMDL is required to be prepared), the maximum length of the compliance schedule is 20 years from the effective date of the SIP (March 2000). To secure the TMDL-based compliance schedule, the discharger must make commitments to support and expedite development of the associated TMDL.

The following analysis pertains to the proposed water-quality-based effluent limits proposed in the Draft Tentative Order dated April 30, 2002.

Pollutants to be Evaluated

The pollutants for which interim limits are proposed for the District are as follows:

- Copper
- Mercury
- Selenium
- Silver
- Cyanide

The draft tentative order contains no final effluent limits for cyanide and proposes an interim limit of 25 µg/L. This is based on the understanding that a regional study is underway to develop a site specific objective for cyanide and that, therefore, there is no applicable standard for use in calculating cyanide effluent limitations. The District will participate in and support the regional study as required by Provision # 2 of the draft tentative order. It is our understanding that no feasibility analysis is necessary for cyanide while a site specific objective is under development. Therefore, the rest of this analysis addressed only copper mercury, selenium, and silver.

Final Effluent Limit Attainability

The proposed final effluent limits contained in the draft tentative order for copper, mercury, selenium, and silver are compared to the maximum observed effluent concentrations for these constituents in the table below.

Pollutant	Water Quality Based Effluent Limits		Sanitary District No. 5 Effluent Quality
	AMEL[1]	MDEL[2]	MEC[3]
Copper	13	23.6	24

Mercury	0.025	0.046	0.014
Selenium	2.5	5	5
Silver	10.9	21.8	14

All values in µg/L.
[1]AMEL: average monthly effluent limit
[2]MDEL: maximum daily effluent limit
[3]MEC: maximum effluent concentration

The final effluent limits shown above are calculated using procedures described in Section 1.4 of the SIP. Background values (maximum values) were derived from Regional Monitoring Program data collected at two Central Bay stations (Yerba Buena Island and Richardson Bay). Dilution values used in the calculation of final effluent limits were as follows:

(1) dilution = 10:1 for non-bioaccumulative pollutants (copper and silver). Note that for cyanide, the dilution credit was eliminated because the ambient water was assumed to exceed the water quality objective of 1.0 µg/L.
(2) dilution = zero for 303(d) listed bioaccumulative pollutants (mercury and selenium)

Other variables in the effluent limit calculation included coefficients of variation for different pollutants in different effluents, and freshwater versus saltwater objectives based on ambient salinity.

Maximum observed effluent concentrations are based on recent plant effluent quality data (1999-2001). As shown in the table above, the District may not be able to immediately comply with proposed water-quality-based effluent limits for copper, selenium and silver. In addition, an interim limit for mercury is requested based on the understanding that a final effluent limit will be derived based on the District's WLA contained in the mercury TMDL when it is completed. The feasibility analysis for these constituents is discussed below.

Source Control and Pollution Prevention Efforts

The District has not previously been required to develop or implement pretreatment, source control, or pollution prevention programs. This is because the discharger is a small (<1 MGD), deepwater discharger with no industrial dischargers. The District's service area is almost entirely residential. However, the District has initiated the following pollution prevention activities:

- The District is a founding member and continues to participate in the North Bay Watershed Association
- The District participates in the SFEI RMP, the Bay Area Pollution Prevention Group (BAPPG), and in the North Bay Dischargers Association
- The District has recently initiated the process to join BACWA
- The District has recently begun working with Central Marin Sanitation Agency and Las Gallinas Sanitary District to staff their school outreach program. The District is also planning to begin providing this program to schools in its service area.

The District was able to comply with its previous permit limits and, therefore, has not conducted any studies to identify pollutant levels in its influent or sources of pollutants to its influent. A first step in a

source control plan for all of the constituents discussed below will be to collect influent data. Additional information for each constituent is discussed below.

Copper

The maximum observed effluent concentration for copper is 24 µg/L (measured in October 2000) which exceeds both the proposed MDEL of 23.6 and AMEL of 13. In addition, there are approximately 11 samples taken since September 2000 that were below a detection limit of 20. For these samples it is also possible that the AMEL was exceeded. Therefore, while it appears that the District will have difficulty complying with the proposed limit, there is insufficient data to confidently assess the District's ability to comply with the proposed limits.

The proposed plan to address copper compliance issues will be to first collect influent and effluent data using lower detection limits. Sampling will be conducted twice a month for the first year. Once 24 samples are collected, sampling frequency will revert to the schedule specified in the Self Monitoring Program. If, after the first year of data collection (starting when the permit is adopted and collecting samples twice a month), the results indicate that compliance with final limits is problematic, a source control program will be developed to identify influent copper sources and implement programs to address these sources.

Mercury

Mercury is 303(d) listed and will be the subject of a TMDL. Final effluent limits for this pollutant will be derived from the wasteload allocation established under the TMDL. The final effluent limit listed above for this pollutant is projected to change based on the results of the TMDL and wasteload allocation. Available information indicates that mercury is a legacy pollutant in San Francisco Bay resulting from past activities and that ongoing loadings from POTWs are not a significant source of this pollutant. As a result, costly measures for either advanced treatment or zero discharge to control mercury loading from POTWs are not expected to be required. Certainly, such actions would not be initiated until TMDLs are completed.

Given that POTWs do not appear to be a significant source of mercury in the Bay, in addition to the District's existing high quality effluent, residential service area, and favorable discharge location, it is not immediately evident the extent to which additional pollution prevention efforts would be effective or have any detectable beneficial impact on the receiving water. However, the District is prepared in the interim until the TMDL is completed, utilizing available existing staff and resources, to initiate pollution prevention actions for mercury. The District will:

- Monitor its influent for mercury using clean sampling techniques and analytical techniques using low detection limits.
- Contribute to development of the mercury TMDL through membership in Bay Area Clean Water Agencies (BACWA)
- Continue to participate in the Bay Area Pollution Prevention Group (BAPPG)
- Review white papers, policies and procedures developed by the BAPPG and evaluate feasibility and potential effectiveness of activities for the District
- Initiate identification of potential commercial and residential sources of mercury in its service area, relying on BAPPG assistance, including quantifying dentists and doctors offices.

Should mercury effluent levels exceed the proposed final limit of 0.025 at some point in the future, the District will implement the following source control activities:

- Based on information from the source identification, educate owner/operators of sources of mercury discharge using BAPPG information regarding best management practices (BMPs)
- Support regional efforts to reduce residential sources of mercury which target exchange of fluorescent lights and thermometers
- Monitor changes in the Disrict's influent and effluent resulting from these efforts, and evaluate next steps
- Prepare a specific time schedule for completing these various activities over a period of five years

Selenium

Selenium was detected once in the District's effluent at a concentration of 5 µg/L which exceeds the proposed AMEL and equals the proposed MDEL. Therefore, the District may have difficulty consistently complying with the proposed effluent limit. The District has not previously had any reason to consider selenium a concern and, therefore, has not conducted any source identification or control actions for selenium. The District proposes to begin monitoring its influent and continue monitoring its effluent using low detection limits to further characterize influent and effluent quality. Sampling will be conducted twice a month for the first year. Once 24 samples are collected, sampling frequency will revert to the schedule specified in the Self Monitoring Program. If, after the first year of data collection (starting when the permit is adopted and collecting samples twice a month), effluent selenium levels have exceeded the proposed limit of 2.5 µg/L, then a source control program targeting selenium sources will be developed and implemented.

Silver

Silver was detected in the District's effluent at a maximum concentration of 14 µg/L which exceeds the proposed AMEL. Therefore, the District may have difficulty consistently complying with the proposed effluent limit. The District has not previously had any reason to consider silver a concern and, therefore, has not conducted any source identification or control actions for silver. The District proposes to begin monitoring its influent and continue monitoring its effluent using low detection limits to further characterize influent and effluent silver levels. Sampling will be conducted twice a month for the first year. Once 24 samples are collected, sampling frequency will revert to the schedule specified in the Self Monitoring Program. If, after the first year of data collection (starting when the permit is adopted), effluent silver levels have exceeded the proposed AMEL, then a source control program targeting silver sources will be developed and implemented.

Summary

This evaluation indicates that immediate compliance with projected final effluent limits for copper, mercury, selenium and silver is not feasible for the District.

In accordance with the requirements of the SIP, the District requests that the Regional Board refrain from the adoption of final effluent limits for these constituents. In lieu of final limits, the NPDES permit should include the interim performance based limits listed below:

Pollutant	Proposed IPBL (µg/L)
Copper	30
Mercury	0.087
Selenium	50
Silver	156

The IPBLs for copper and silver were determined using effluent data from 1999-2001 using methods consistent with the Regional Board's recommended methodology as discussed below. Insufficient detected data was available to determine a statistically based IPBL for selenium. Therefore, the interim limit is the limit in the previous permit. The interim limit for mercury is based on the pooled Bay Area data for secondary treatment plants.

For copper and silver, the distribution of the data was evaluated using normal probability plots and regression statistics. Because some of the data were below detection, summary statistics and interim permit limits were calculated using the method of Helsel and Cohn (1988) which appears to be consistent in concept with the Regional Board's recommended "log-Probit method" for estimating IPBLs from data sets with data below detection. This method was used to estimate values three standard deviations above the mean of the untransformed and Ln-transformed data (equivalent to the 99.87th percentile), as specified in the Regional Board's method. The value estimated using the untransformed data is equivalent to the IPBL with no further calculations. The value based on the Ln-transformed data is back-transformed (exponentiated) to the original concentration units to provide the IPBL. The summary statistics and calculated IPBLs are shown below:

Summary Statistics and Recommended Interim Performance-Based Limits (IPBLs)

Statistic	Copper, µg/L		Selenium, µg/L		Silver, µg/L	
	Untrans-formed data	Ln(x)	Untrans-formed data	Ln(x)	Untrans-formed data	Ln(x)
n	36	NA	17	NA	12	NA
Percent detected	61.1%	NA	5.9%	NA	50.0%	NA
n detected	22	NA	1	NA	6	NA
Minimum Detected Value	5.2	NA	5	NA	0.3	NA
Maximum Detected Value	24	NA	5	NA	14	NA
Minimum Reporting Limit	2	NA	1	NA	0.2	NA
Maximum Reporting Limit	20	NA	20	NA	10	NA
Mean	8.973	2.096	ID	ID	2.617	0.047
Standard Deviation	4.778	0.431	ID	ID	4.661	1.668
R^2 for dist'n regression fit	0.75	0.88	ID	ID	0.89	0.98
IPBL Basis	µ + 3σ	e^(µ+3σ)	µ + 3σ	e^(µ+3σ)	µ + 3σ	e^(µ+3σ)
Est'd IPBLs	23.3	29.6	Insufficient detected data		16.6	156.4
Recommended IPBLs	**30 µg/L**		Insufficient detected data		**156 µg/L**	

A proposed schedule for characterizing the District's influent and effluent and conducting source identification and control activities is summarized below:

Proposed Action	Start Date	Time to complete

1. Collect influent and effluent data with low detection limits for Cu, Hg, Ag, Se	July 2002	Ongoing during permit term
2. Continue participation in BAPPG, regional studies	Ongoing	Ongoing
3. Initial assessment of compliance with final limits	July 2004	2 months
4. Develop P2 program and implementation schedule for constituents with compliance issues	September 2004	6 months
5. Initiate P2 programs as appropriate	March 2005	According to schedule developed in 4.

This completes our submittal. Please feel free to contact me at (415) 435-1501 for further information.

Very Truly Yours,

Henrik Olsgaard

Henrik Olsgaard
Acting District Manager